

STUDIES IN AQUATIC INSECTS, XI: SEVEN NEW SPECIES OF THE
GENUS *OCHROTRICHIA* (*OCHROTRICHIA*) FROM
SOUTH AMERICA (TRICHOPTERA; HYDROPTILIDAE)

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Abstract. — Seven new species in the genus *Ochrotrichia* (*Ochrotrichia*) from South America are described and the male genitalia figured. The species here described are *Ochrotrichia raposa* (Colombia, Ecuador); *O. puyana* (Ecuador); *O. ecuatoriana* (Ecuador, Colombia); *O. oblongata* (Trinidad); *O. unica* (Colombia); *O. yanayacuana* (Ecuador); and *O. concha* (Brasil), the southernmost record for the subgenus *Ochrotrichia* in South America.

Key Words: New species, *Ochrotrichia* (*Ochrotrichia*), Trichoptera, Hydroptilidae, South America

In 1979, Marshall established the tribe Ochrotrichiini in the subfamily Hydroptilinae for the genera *Ochrotrichia* including its two subgenera (the nominate and *Metrichia*) and *Rhyacopsyche*. All members of the tribe are limited to the New World, although other tribes in the subfamily are found in all other regions of the world. Denning and Blickle in their revision (1972) state that the genus, from which they exclude *Metrichia*, is "exclusively North American in distribution, occurring from a few localities in Canada to southern Mexico." In the same year Flint independently recorded twenty species from Mexico to Panama, and in 1981 recorded two species from northern Venezuela, the first records from South America. The recent report of *Ochrotrichia* (*O.*) *tenanga* Mosely from northern Peru was the first indication of the subgenus from the west coast of South America (Flint and Reyes 1991). Other reports (Botosaneanu 1979, 1990, Flint 1968) list the genus from the Greater and Lesser Antillean islands. Thus the distribution of the subgenus *Ochrotrich-*

ia seemed to occur only in the northern and western margins of South America, in marked contrast to that of *Metrichia*. The latter has been recorded only as far north as Texas and Arizona in the United States, but as far south as central Chile (Flint 1983). It is found throughout the Antilles as well, and appears to be especially diverse in the Andean Mountains.

However, recent collections made in South America and placed in the National Museum of Natural History, Smithsonian Institution (USNM) show that the subgenus *Ochrotrichia* is actually more widely distributed and diverse in South America than believed. The species described herein extend the known distribution in northern South America east to Trinidad and fill in gaps in Colombia and Ecuador. The most unexpected record is from the central Amazon near Manaus, Brazil. In spite of these new records, the accumulation of specimens of subgenus *Ochrotrichia* from South America is very slow although many collections have been made there in recent years.

Ochrotrichia (O.) raposa*,*NEW SPECIES**

Figs. 1–3

On the basis of the shape of the tenth tergum and inferior appendages, this species appears to be similar to *Ochrotrichia (O.) pacifica* Flint. The new species is distinguished by the presence of a short, slender, basodorsal process and a long process with the apex twisted on the left side on the tenth tergum.

Adult.—Length of forewing 2 mm. Color in alcohol dark brown. Male genitalia: Ninth segment deeply depressed and produced anteriorly. Tenth tergum with short, slender, basal process on the right side; mesally with a stout process and a second stout process with apex curved to the left; another long, slender process with the apex twisted on the left side; in lateral view with short basodorsal process and with three long curved processes. Inferior appendages in lateral view long with the apex rounded; in dorsal and ventral views with a row of black peglike setae around apex and on midbasal ridge. Phallus long and threadlike.

Material.—Holotype, male: COLOMBIA: Dept. Valle del Cauca, Río Raposo, January 1965, V. H. Lee (USNM). Paratypes: ECUADOR: Esmeralda Prov., La Unión, 3 February 1979, Jos. J. Anderson, 1 ♂ (USNM); Los Ríos Prov., Quevedo (5 km S), 14 January 1978, P. J. Spangler & J. Anderson, 1 ♂ (USNM).

Etymology.—*raposa*, Spanish, feminine name for the Raposo River.

Ochrotrichia (O.) puyana*,*NEW SPECIES**

Figs. 4–5

This species fits best into the *aldama* group (Flint 1972) on the basis of the shape

of the inferior appendages and the tenth tergum. However, it is easily distinguished from all its congeners by the single, elongate mesal lobe of the tenth tergum which has two short curved spines, dorsolaterally.

Adult.—Length of forewing 2.5 mm. Color in alcohol dark brown. Male genitalia: Ninth segment deeply depressed and produced anteriorly. Tenth tergum divided at apex with two short stout spines on the left side apically; in lateral view on the dorsal margin with two stout spines. Inferior appendages in lateral view elongate and broad; in dorsal view with an apical row of black peglike setae and with a few black peglike setae on the ventral margin. Phallus long and threadlike.

Material.—Holotype, male: ECUADOR: Pastaza Prov., Puyo, 11 May 1977, P. J. Spangler & D. R. Givens #36 (USNM).

Etymology.—*puyana*, Spanish, feminine for inhabitant of Puyo.

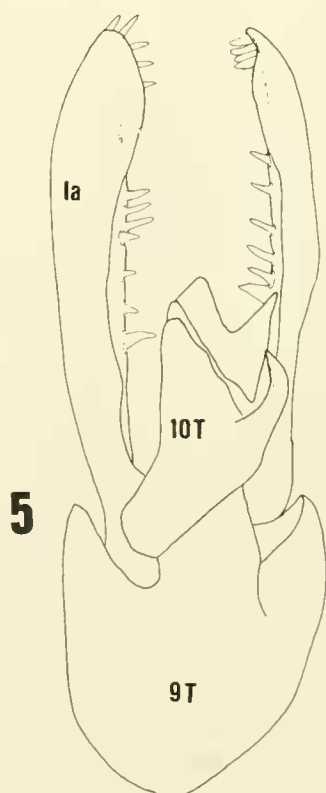
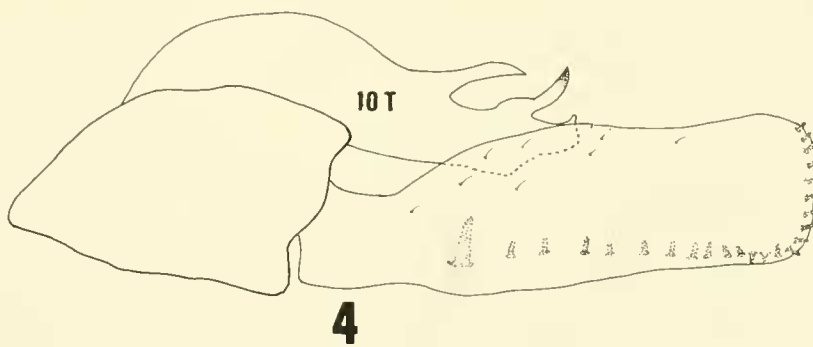
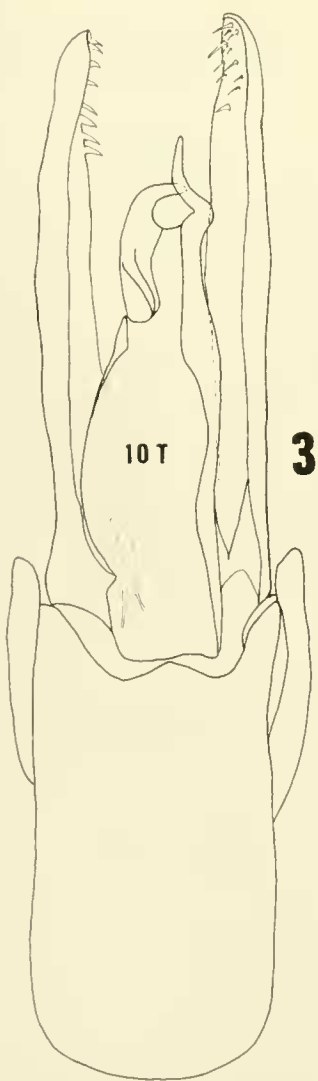
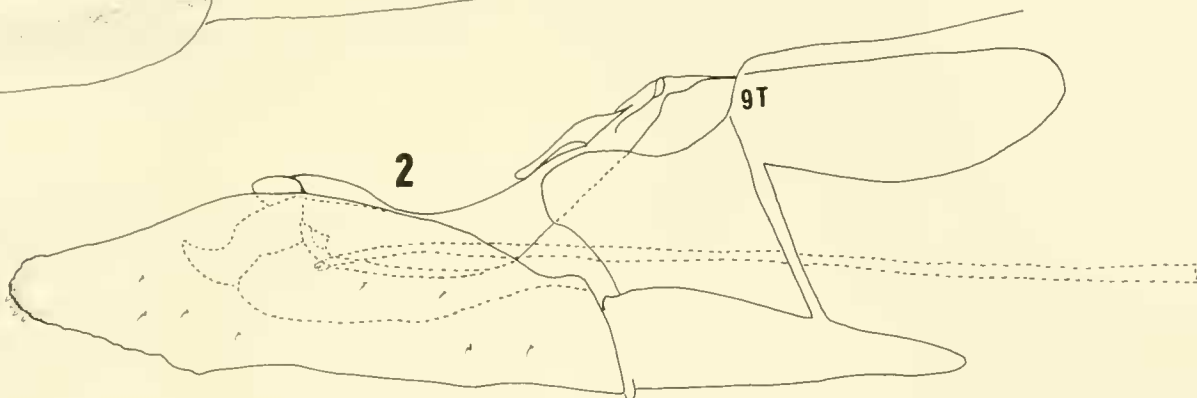
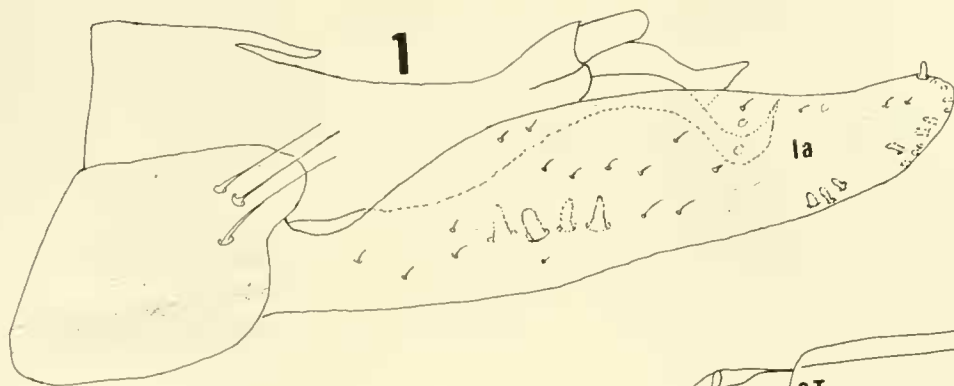
Ochrotrichia (O.) ecuatoriana*,*NEW SPECIES**

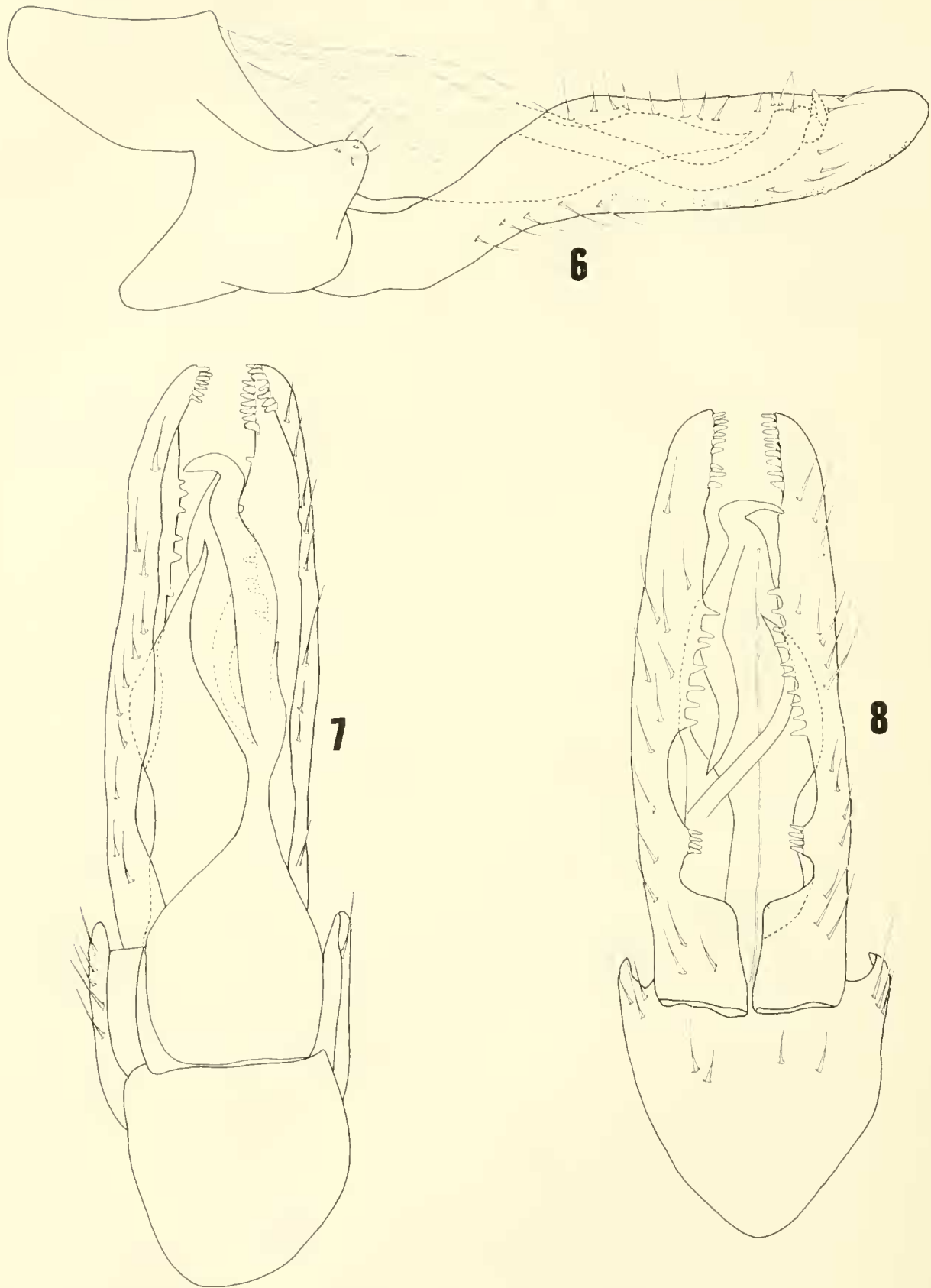
Figs. 6–8

On the basis of the shape of the tenth tergum and inferior appendages in lateral view, this species appears to be closely related to *O. raposa*. However, the lack of the basodorsal spine on the tenth tergum makes *O. ecuatoriana* easily distinguished from that species.

Adult.—Length of forewing 2.5 mm. Color in alcohol pale brown. Male genitalia: Ninth segment deeply depressed and slightly produced anteriorly; in lateral aspect with rounded lobe produced posteriorly. Tenth tergum in dorsal aspect with left lobe elongate, apically curving to the right, right lobe wide at the base and narrowed at the slightly sinuous apex; in ventral view with a long

Figs. 1–5. Male genitalia of *Ochrotrichia (O.)*. 1–3, *raposa*. 1, Left side. 2, Right side. 3, Ninth and tenth terga and inferior appendages, dorsal view. 4, 5, *puyana*. 4, Left side. 5, Ninth and tenth terga and inferior appendages, dorsal view. (9T = Ninth tergum. 10T = Tenth tergum. Ia = Inferior appendage.)





Figs. 6-8. Male genitalia of *Ochrotrichia (O.) ecuatoriana*. 6, Left side. 7, Ninth and tenth terga and inferior appendages, dorsal view. 8, Ventral view.

spinelike lobe curved and directed posteriad and a short spinelike lobe whose apex is directed anteriorly. Inferior appendages very long and slender in lateral aspect, apex rounded; in ventral view the apex and ven-

tral margin with black peglike setae; close to the base a group of peglike setae on a small prominence. Phallus long and thread-like.

Material.—Holotype, male: ECUADOR:

Pastaza Prov., Puyo, 14 May 1977, P. J. Spangler & D. R. Givens (USNM). Paratype: COLOMBIA: Dept. Valle del Cauca, Río Raposo, January 1965, V. H. Lee, 1 ♂ (USNM).

Etymology.—*ecuatoriana*, Spanish for the women from Ecuador.

***Ochrotrichia (O.) oblongata*,**

NEW SPECIES

Figs. 9–11

On the basis of the shape of the tenth tergum and inferior appendages, this species belongs to the *tenanga* group (Flint 1972). However it can be separated by possessing two short spines on the left side and by the placement of two long processes on the right side.

Adult.—Length of forewing 2 mm. Color in alcohol dark brown. Male genitalia: Ninth tergum deeply depressed and produced anteriorly. Tenth tergum with an elongate, dark-tipped, middorsal process giving rise to two short, basolateral spines on the left side; right side with two long processes; in lateral view with two long processes, one arising basally and extending ventrally and the other arising from an enlarged base at mid-length dorsally, ending in an apex curved ventrad. Inferior appendages in lateral view long, slender, apex rounded; in ventral view the apex and midbasal ridge with a band of black, peglike setae. Phallus long and threadlike.

Material.—Holotype, male: TRINIDAD: Arima cascade, 17 April 1985, V. Jones (USNM).

Etymology.—*oblongata*, Latin, for the longer than broad shape of the inferior appendages.

***Ochrotrichia (O.) unica*,**

NEW SPECIES

Figs. 12–14

On the basis of the tenth tergum and inferior appendages, this species fits in the *xena* group (Flint 1972). However, this species can be recognized by the almost circular

shape of the apex of the inferior appendages in lateral aspect and by the rather simple tenth tergum.

Adult.—Length of forewings 2.8 mm. Color in alcohol dark brown. Male genitalia: Ninth tergum deeply depressed and slightly produced anteriorly; in lateral aspect almost square. Tenth tergum a simple dorsal plate, almost straight in lateral view. Inferior appendages in lateral view with patch of setae dorsally on one, the apex circular, dark and with many peglike setae. Phallus long and threadlike.

Material.—Holotype, male: COLOMBIA: [Dept. Valle del Cauca], Río Raposo, January 1965, V. H. Lee (USNM). Paratypes: Same data as the holotype, 2 ♂ (USNM).

Etymology.—*unica*, Spanish, for unique.

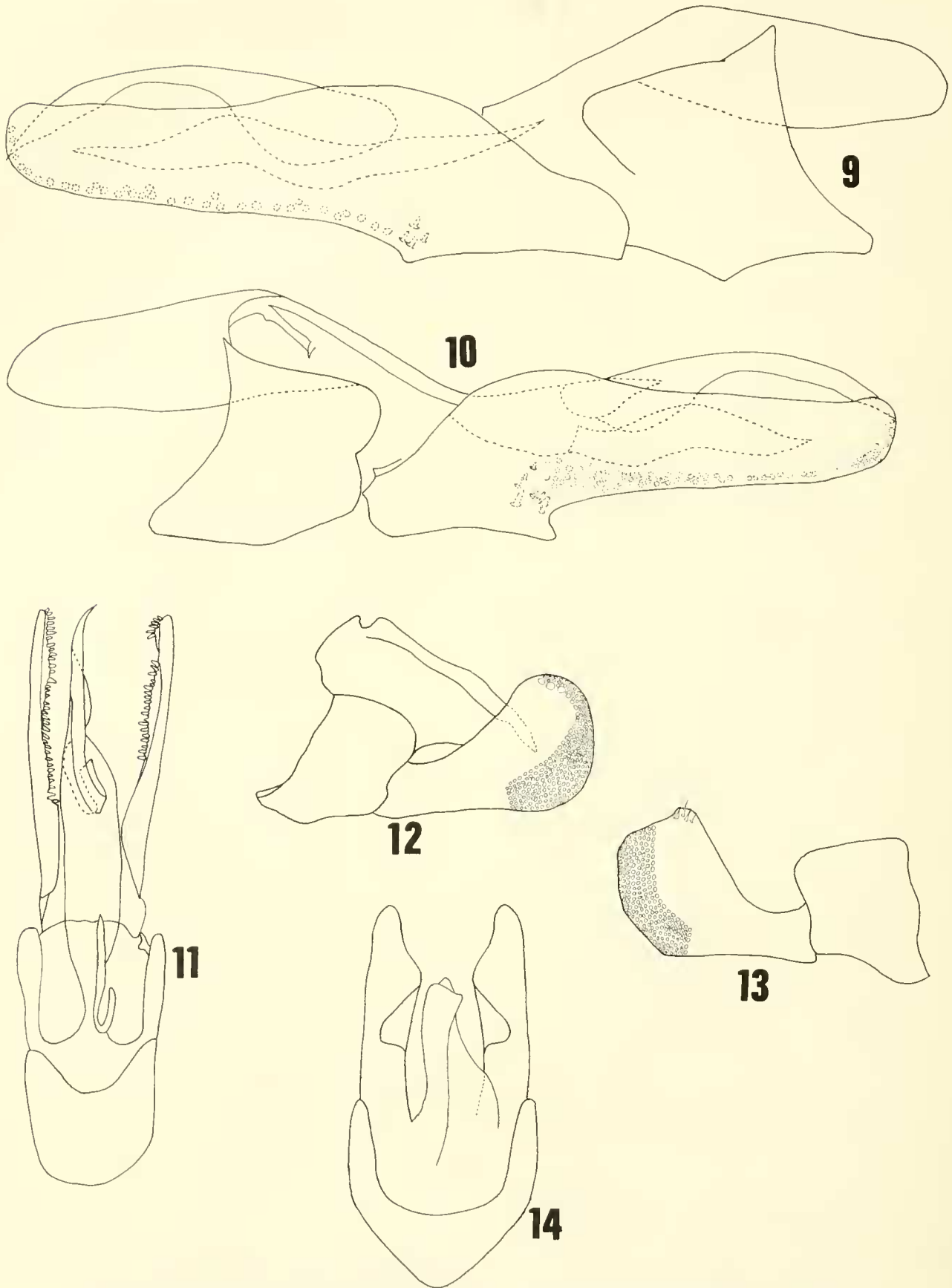
***Ochrotrichia (O.) yanayacuana*,**

NEW SPECIES

Figs. 15–17

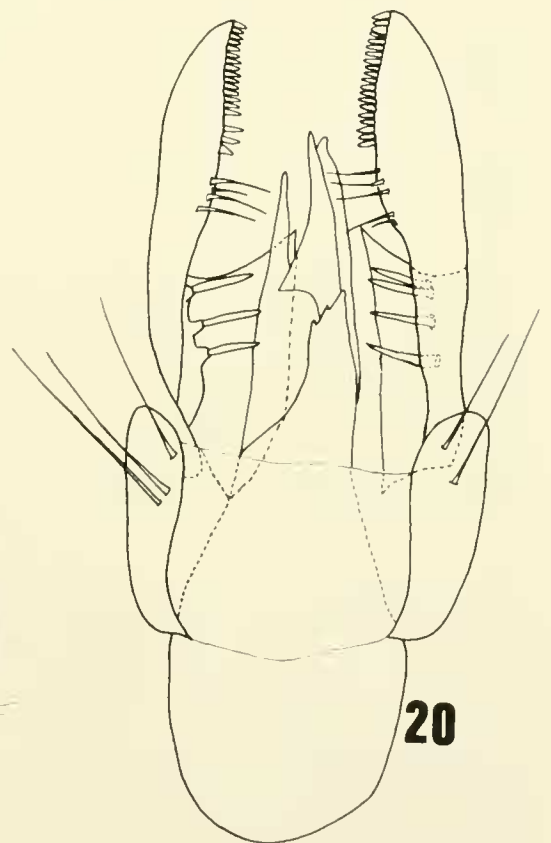
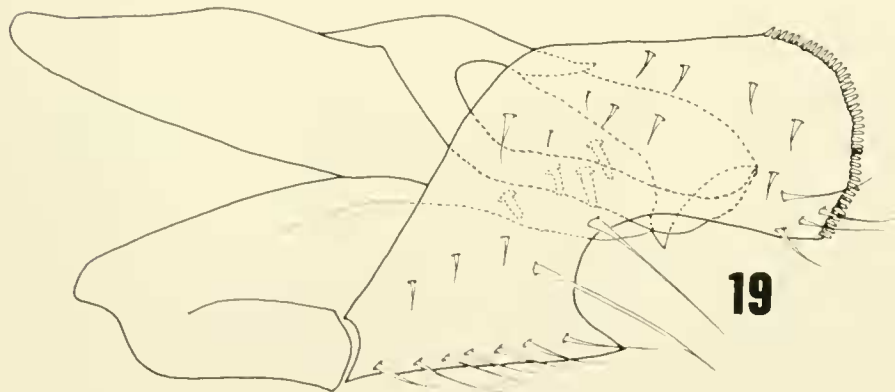
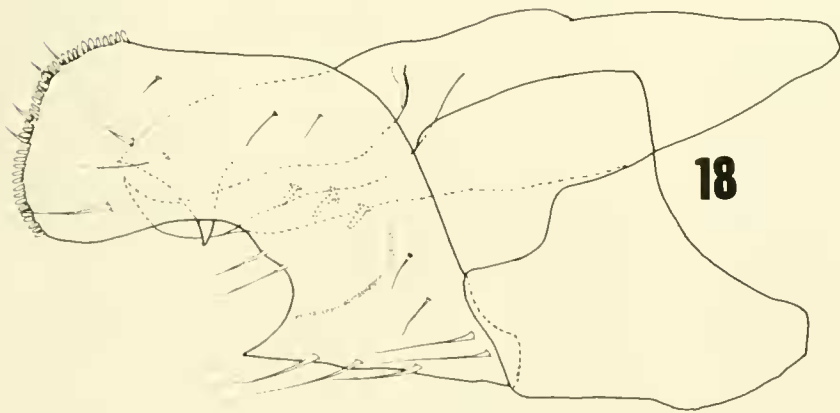
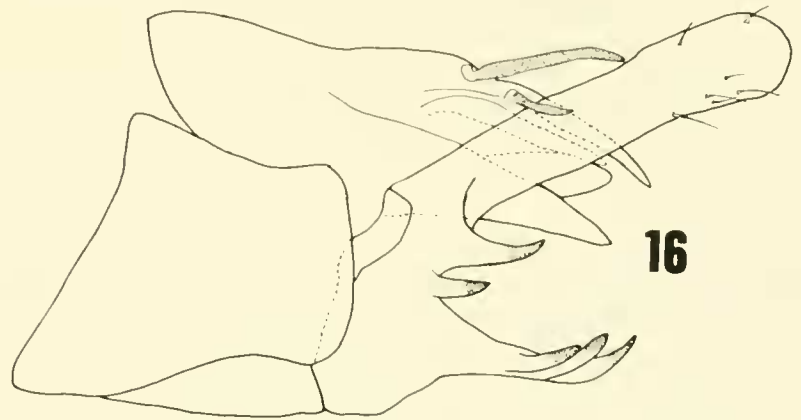
Based on the overall appearance of the genitalia, this species appears to be related to *Ochrotrichia (O.) moselyi* Flint, *O. (O.) tagala* Flint and *O. (O.) pectinifera* Flint; however, it can be distinguished from those species by the presence of a large, upturned, black-tipped spine on the inner surface of the right inferior appendage and by the presence of two large spines on the tenth tergum.

Adult.—Length of forewings 2 mm. Color in alcohol dark brown. Male genitalia: Ninth tergum deeply depressed and slightly produced anteriorly. Tenth tergum with two, long, narrow, processes, ventral one wider anteriorly, apex acute and directed ventrad; dorsally with two black spines, basal-most larger than the other; in lateral aspect with an acute apex to the ventral lobe. Inferior appendages in lateral view with an elongate, fingerlike, dorsal lobe; midventrally with 5–6 heavily sclerotized spines: on the left appendage with two spines on the middorsal margin and three on the posteroventral margin, on the right appendage with six spines in a row on the lateral margin; basal



Figs. 9–14. Male genitalia of *Ochrotrichia* (*O.*). 9–11, *oblongata*. 9, Right side. 10, Left side. 11, Ninth and tenth terga and inferior appendages, dorsal view. 12–14, *unica*. 12, Left side. 13, Right side. 14, Ninth and tenth terga and inferior appendages, dorsal view.

Figs. 15–20. Male genitalia of *Ochrotrichia* (*O.*). 15–17, *yanayacuana*. 15, Right side. 16, Left side. 17, Ninth and tenth terga and inferior appendages, dorsal view. 18, 19, *concha*. 18, Right side. 19, Left side. 20, Ninth and tenth terga and inferior appendages, dorsal view.



portion widened. Phallus long and thread-like.

Material.—Holotype, male: ECUADOR: Tungurahua Prov., Yanayacu, 300 m, 29–30 August 1977, L. E. Peña G. (USNM).

Etymology.—*yanayacuana*, Spanish, feminine, for inhabitant of that region.

***Ochrotrichia (O.) concha*,**

NEW SPECIES

Figs. 18–20

This species is another member of the *xena* group, with a simple tenth tergum and peculiarly shaped inferior appendages. It may be recognized by possessing two lateral plates on the left side of the tenth tergum, and a long, slightly sinuous process on the right side, whose apex is turned upward in lateral aspect.

Adult.—Length of forewing 2 mm. Color in alcohol dark brown. Male genitalia: Ninth segment deeply divided dorsally, slightly produced anteriorly. Tenth tergum basally broad with two long processes on the left side, and a short basodorsal process on the left; in lateral aspect with a large process with apex triangular and ventrally directed; on the right side, long, slightly sinuous process ventrally with the apex turned upward. Inferior appendages in dorsal view with a mesal row of long spines on internal face; in lateral view with apex rounded and trumpet shaped with a row of small, black peglike setae on apical margin. Phallus tubular with conically expanded base.

Material.—Holotype, male: BRASIL: Amazonas State, AM 010, km 246 [ca. 20 km W Itacoatiara], 15–16 July 1979, J. Arias (USNM).

Etymology.—*concha*, Latin, for a trumpet shaped like a snail shell.

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LITERATURE CITED

- Botosaneanu, L. 1979. The caddis-flies (Trichoptera) of Cuba and of Isla de Pinos: A synthesis. *Studies on the Fauna of Curaçao and other Caribbean Islands* 59: 33–62.
- . 1990. Results of trichopterological (Insecta: Trichoptera) travel to the Lesser Antilles in 1989. *Bulletin de L'Institut Royal des Sciences Naturelles de Belgique, Entomologie* 60: 39–48.
- Denning, D. G. and R. L. Blickle. 1972. A review of the genus *Ochrotrichia* (Trichoptera: Hydroptilidae). *Annals of the Entomological Society of America* 65: 141–151.
- Flint, O. S., Jr. 1968. Bredin-Archbold-Smithsonian Biological Survey of Dominica 9, the Trichoptera (caddisflies) of the Lesser Antilles. *Proceedings of the United States National Museum* 125(3665): 1–86.
- . 1972. Studies of Neotropical caddisflies, XIII: The genus *Ochrotrichia* from Mexico and Central America (Trichoptera: Hydroptilidae). *Smithsonian Contributions to Zoology* 118: 1–28.
- . 1981. Studies of Neotropical caddisflies, XXVIII: The Trichoptera of the Rio Limon Basin, Venezuela. *Smithsonian Contributions to Zoology* 330: 1–61.
- . 1983. Studies of Neotropical caddisflies, XXXIII: New species from austral South America (Trichoptera). *Smithsonian Contributions to Zoology* 377: 1–100.
- Flint, O. S., Jr. and L. Reyes A. 1991. Studies of Neotropical caddisflies, XLVI: The Trichoptera of the Río Moche Basin, Department of La Libertad, Perú. *Proceeding of The Biological Society of Washington* 104: 474–492.
- Marshall, J. E. 1979. A review of the genera of the Hydroptilidae (Trichoptera). *Bulletin of the British Museum (Natural History), Entomology Series* 39: 135–239.